

An unusual complication of endotracheal tube suctioning

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To the editor: There are reports of oro/nasogastric tubes and suction catheters leading to complications with the endotracheal tube (ETT), leading to inadvertent extubation, obstruction, and inability to ventilate [1–5]. We report an unusual complication of intratracheal suctioning.

A 15-year-old boy underwent aortic valve replacement for bicuspid aortic valve. Anesthetic induction was uneventful with propofol, fentanyl, and vecuronium, with placement of a 7.0-mm-internal diameter (ID) cuffed oral ETT (Mallinkrodt, St. Louis, MO, USA). Prior to weaning from cardiopulmonary bypass (CPB), the patient was suctioned via the tracheal tube using a 14-Fr suction catheter (Airlife Tri-Flo Suction Catheter; Cardinal Health, McGaw Park, IL, USA). Three attempts at suctioning were performed secondary to secretions. Upon the third passage of the suction catheter, resistance was encountered while attempting to advance the catheter. Moreover, a great degree of resistance was encountered upon attempting to withdraw the catheter, resulting in the inability to either advance or withdraw the catheter. An ultrathin fiberoptic scope was used to visualize the lumen of the ETT; however, the majority of the tracheal lumen was occupied by the suction catheter, and the bronchoscope could not be passed. The surgeon was notified of the problem, and the patient was extubated and re-intubated with another 7.0-mm-ID cuffed oral ETT. Subsequently, the patient was weaned from CPB uneventfully. Extreme kinking of the suction catheter was noted. The suction catheter had passed through the Murphy eye and the tip curved into the distal opening of the ETT. When force was applied during the withdrawal attempt, the catheter was in a fixed position (Fig. 1).

All previous reports of catheter knotting involved the use of mainly nasogastric tubes [1–4], and a recent report implicated suction catheters [5]. In these reports, the uses of these devices were extraluminal.

To our knowledge, this is the first reported case of intraluminal suctioning leading to extreme catheter knotting within the ETT. The early recognition and management of this complication should be rapid because it may lead to potentially disastrous consequences, especially in patients with limited cardiopulmonary reserve or a difficult airway. In regard to prevention, we recommend the following when multiple passes of suctioning are anticipated:



Fig. 1. Suction catheter exiting the Murphy eye and taking a tortuous path into the tip of the endotracheal tube (ETT), leading to the inability to withdraw the suction catheter

1. Ensure that the suction catheter size is appropriate in relation to the lumen of the ETT prior to insertion.
2. Consider lubricant or silicone spray when a larger diameter suction catheter is considered for suctioning.
3. Consider the use of a smaller diameter suction catheter.
4. Avoid manipulation (back and forth advancement and withdrawal) of the suction catheter within the lumen of the ETT.
5. When using a larger diameter suction catheter, completely remove the suction catheter from the ETT and re-insert if needed for a subsequent pass.

References

1. Dorsey M, Schwinder L, Benumof JL. Unintentional endotracheal extubation by orogastric tube removal. *Anesth Rev.* 1988;15: 30–3.
2. Pousman RM, Koch SM. Endotracheal tube obstruction after orogastric tube placement. *Anesthesiology.* 1997;87:1247–8.
3. Kubo K, Nakao S, Kawabata Y, Nishimae H, Masuko S, Shingu K. An unusual case of airway obstruction at the tip of an endotracheal tube caused by insertion of a nasogastric tube. *J Anesth.* 2008;22:52–4.
4. Onisei AM, Shah S. An unforeseen complication of orotracheal suctioning. *Pediatr Anesth.* 2008;18:911–2.

5. Au-Truong X, Lopez G, Joseph NJ, Salem MR. A case of a nasogastric tube knotting around a tracheal tube: detection and management. *Anesth Analg*. 1999;89:1583-4.

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